

Geographical Boundary of Open Innovation: Sources within and beyond cluster

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Abstracts

This paper examines the effects of geographic boundary of open innovation. Open innovation has been getting popular for firms and policy decision makers to create valuable innovation (Chesbrough 2003, Chesbrough et al. 2006). Prior studies focused on the theoretical development on open innovation and investigated the importance of open innovation on firm performance (Lausen & Salter 2006). There are two contradictory approaches on industrial innovations. One approach is based on open innovation to emphasize the importance of openness for innovation and guide firms to access more external sources regardless of geographic boundary. Under this open innovation perspective, there are no considerations on geographic locations of external sources. Another approach is based on geography of innovation, importance of geographic location. In this perspective, a firm located in innovative geographic location or cluster can benefit more from local partners and sources as valuable knowledge and information is embedded within a certain location. These two contradictory approaches make industrial firm difficult to design their openness for innovation. The research questions in this paper are follows: Does more external openness for innovations regardless of location contribute to firm performance? Are the geographic boundaries of external sources for open innovation related to firm performance? In this paper, we develop some hypothesis and conduct empirical studies to verify mentioned hypothesis.

Despite growing interest in open innovation in private and public sectors, there are little empirical studies on the how geographic boundary of open innovation impacts on firm performance. We select two regional clusters where administrated under the same local government and located just within a half hour distance to compare the differences of open innovation. Although both of clusters are located in very close distance, the origin and industrial characteristics are a quite different. One cluster, Sungseo cluster, is originally developed and evolved from low-technology industries and dominated by a group of Small-and-Medium-sized firms. In this cluster, firms get their revenues from local customers. Another cluster, Gumi cluster, is developed for high-technology industries and dominated by large manufacturers like Samsung and LG electronics. Most of local firms supply their products local large firms who export most of their products and closed liked to global partners.

In this study, we collect 365 firm-level data from above two different regional clusters. Depending on geographic location of nine sources of innovation, we measure two independent variables for open innovation: One is the total width of openness that indicates how many sources each firm uses for innovation in regardless of geographic

boundary of clusters. The other is the geographic width of openness, measured by the ratio of sources within clusters to total width of openness. With other control variables like firm age, size and R&D intensity, we analyze the effects of these variables on firm performances measured by number of new product development and patent applications by using ordinary linear regression and negative binominal regression.

The key findings from empirical results show the importance of geographic boundary of open innovation. The total width of openness shows positive significant relationship with firm performance. However there are no curve-linear relationships different from other studies in open innovation. The geographic width of openness show negative significant relationships with firm performances. It means that when local firms use more local sources for innovation, they get negative performances from open innovation. To compare the effect of clusters on these relationships, we compare these analyses by two regional clusters. In both clusters, there are positive relationships between total width of openness and firm performances. However, the negative relationships between geographic width of openness and firm performance are founded in a cluster with low-technology and dominated by local supplier relationship.

Different from existing studies, this paper shows the importance of geographic balance of external sources for open innovation. A firm can benefit from the more usage of external sources for innovation. This external linkage can contribute to innovation performance complementary to internal sources. However, if more external sources are located just within a local centric cluster, the benefits from openness can be reduced by duplicated and invaluable information within a cluster. If a firm is located within globally linked cluster, external sources within same cluster can reach more diverse and valuable information to contribute to firm performance.

Main results of this study suggest some implications for industrial firms and policy decision makers interested in open innovation. For firm level decision makers, they should balance the geographic sources of external sources within and beyond cluster depending on the characteristics of cluster. For policy makers, they should develop policy programs for industrial firm to access to valuable sources and collaborate with other sources beyond clusters not just sources within a cluster.

Selected References

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